REMARKS

The claims are 7-17 and 21-26, with claim 7 being in independent form. Applicants respectfully request favorable reconsideration of the subject application in view of the following remarks.

Claims 1-12 and 14 stand rejected under 35 U.S.C. § 103(a) for allegedly being obvious over Breivik (WO 00/01249). Claims 13, 15-17 and 21-26 stand rejected under 35 U.S.C. § 103(a) for allegedly being obvious over Breivik (WO 00/01249), with evidence provided by Food Day, Global Gourmet (March 7, 1997). Applicants respectfully traverse the rejections.

The present invention relates to a novel method of farm-raising fish of marine species including fry, that are still in the growing stage. The method comprises feeding the marine species of fish a feed of 25-70% by weight of proteins, 5-60% by weight of lipids, 0-40% by weight of carbohydrates, and 0-15% by weight of one or more additional components, wherein the lipids comprise at least one oil selected from the group consisting of marine oils and vegetable oils, wherein said at-least-one oil has been treated with at least one nitrogen-containing compound, wherein 1) the amount of nitrogen-containing compound is sufficient to reduce the oil's anisidine value, and 2) the amount of the oil being sufficient to reduce the feed's susceptibility to being degraded through ongoing oxidation, thereby enhancing the feed's ability to either improve the survival rate of the marine species of fish, or improve the growth rate of the marine species of fish.

Breivik relates to a method for stabilizing vegetable and animal oils and pigments for a feed for salmonids with regard to oxidation during production of the fish fodder. When the fat source in the fish feed reacts with oxygen, oxidation products are formed. Page 2, lines 5-9.

The secondary oxidation products, a complex group of compounds such as aldehydes, are measured by analyzing the anisidine value of the sample. Page 2, lines 10-13. Examples 1, 2, and 8-10 of Breivik specifically refer to analysis of anisidine values and provide detailed data on the anisidine values of the specimens. As anisidine value is the only oxidative characteristic being tested therein, it is clear that Breivik is directed toward its effects on the anisidine values. As confirmed in "Lexicon of Lipid Nutrition (IUPAC Technical Report)," *Pure Appl. Chem.*, 73(4), 685-744, 689 (2001) (Attachment D to Amendment After Final Rejection dated January 23, 2009), anisidine is a measure of aldehyde production during oxidation of fat, and is used to characterize the oxidative history of fat. It is known by those skilled in the art that aldehydes are indicators of previous oxidative damage. *See* Charlie Scrimgeour, *Bailey's Industrial Oil and Fat Products,* Chemistry of Fatty Acids, 6th Ed., Sec. 4.1.3., p. 19 (2005) (Attachment E to Amendment After Final Rejection dated January 23, 2009). Therefore, the disclosure in Breivik is clearly directed toward the measurement of previous oxidative damage.

In contrast to Breivik, as recited in claim 1, the subject invention discloses a method 1) to reduce the oil's anisidine value, and 2) to reduce the feed's susceptibility to being degraded through ongoing oxidation. A measure of ongoing oxidation refers to oxidative stress of the feed, where the measurement relates to the oxygen consumption after production. Example 1 of the subject application shows data regarding the presence and concentration of free radicals in the feed. Page 4, line 24 – page 5, line 3. As disclosed in the specification, "[f]ree radicals are associated with ongoing oxidation; i.e. a high level of free radicals in a sample is associated with a high oxidative stress of that sample." Page 4, lines 25-27. The results of the example show that the present invention produces a feed with reduced oxidative stress of the

feed composition as identified and verified through testing the levels of free radicals in the feed. Page 5, lines 14-15.

The Examiner relies on page 12, lines 8-10 of Breivik in alleging that it addresses ongoing oxidation. However, this paragraph merely emphasizes the fact that Breivik is directed toward reducing oxidation "during the production process." Applicants do not refute the position that an object of Breivik is to address the problem of oxidation of feed. Applicants submit that simply stating that Breivik leads to increased storage stability does not disclose or suggest the reduced ongoing oxidation of the presently claimed invention. There is no indication in Breivik that the prolonged storage life is due to anything other than the reduction of oxidation during the production process. Applicants respectfully argue that Breivik is merely directed toward the oxidation "during the production process" as measured by anisidine values, and fails to disclose or suggest the presently claimed invention, which is directed toward this same aspect of oxidation and ongoing oxidation, measured by free radical concentration.

Furthermore, Example 2 of the subject application shows that when fish feed is reacted with fish meal (an important protein containing ingredient in fish feed), a chemical reaction occurs between untreated fish oil and the fish meal that renders the proteins less bioavailable for fish and/or it decomposes in the intestine, thereby releasing secondary oxidation products. Page 6, lines 12-19. The present invention recognizes this problem associated with commercially available feed and discloses a feed of improved quality, which does not produce these same oxidative problems. Page 6, lines 21-22. Further, the present invention recognizes that oxidative stress in the fish feed leads to heart rupture problems in marine species, and using the feed of the present invention reduces the incidence of heart rupture. There is simply nothing in the prior art that suggests that the presently claimed invention provides a solution to the

problems of limited bioavailability and oxidative stress of fish feed and to breeding. Breivik fails to recognize these additional problems in the state of the art and fails to disclose the solution: a feed having reduced anisidine value and reduced susceptibility to ongoing oxidation.

Unlike the present invention, Breivik neither discloses a method for reducing the concentration of free radicals in the feed, nor refers to ongoing oxidation and oxidative stress. The effects of oxidation other than the effects on anisidine values are simply not taught or suggested in Breivik. Breivik does not disclose or suggest any information that would lead one to think that the reduction in anisidine value (a measure of oxidation during the production process) would lead to reduction in the concentration of free radicals (a measure of ongoing oxidation). Therefore, a producer of feed for marine species, not wanting a feed with pigment, would not look to Breivik as a source of feed with reduced oxidative stress. Therefore, Applicants respectfully submit that the presently claimed invention is not rendered obvious by Breivik.

With regard to claims 13, 15-17 and 21-26, the Examiner alleges that one of ordinary skill in the art would have recognized that in using the feed of Breivik for white-colored fish, it would have been obvious to produce the feed without carotenoids.

Applicants acknowledge that one skilled in the art would recognize that cod and halibut are white-fleshed fish, and would not include carotenoids in their diet. Further, Applicants acknowledge that one of ordinary skill would have a reasonable expectation that the feed according to Breivik, but without carotenoids, would serve as an acceptable diet for cod, halibut and fry. However, it would be impracticable for a person of ordinary skill to use the feed according to Breivik, but without carotenoids, as suggested by the Examiner

The rationale behind Breivik is to reduce the amount of carotenoids that need to be purchased for production of the feed in order to reduce costs. However, even with this reduction, the feed produced by Breivik is still more costly than the standard commercial feed processes. Simply, Breivik is cost prohibitive for feed not containing carotenoids. A person of ordinary skill would not use Breivik as it is more expensive and time consuming production and does not render the benefits for white-fleshed fish, such as cod or halibut, that it does as feed for salmonids. Breivik fails to disclose or suggest a rational for using this more expensive and time consuming process for feed for white-fleshed fish.

In contrast to Breivik, the presently claimed invention discloses a new benefit that may be achieved when using a method of producing a feed containing oils treated by urea and/or other amines or amides. That is, the presently claimed invention teaches the unexpected effect of reducing oxidative stress of feed to marine species measured as concentration of free radicals in the feed (Example 1), or measured as avoiding the negative effects of reaction between feed proteins and lipid oxidation products (Example 2). With this new benefit, one skilled in the art will recognize that increased production costs also have additional benefits, thereby making the process sensible.

Food Day does not remedy the deficiencies of Breivik. The Examiner relies on Food Day for evidence that the omission of carotenoids from the food taught by Breivik would not require undue experimentation on the part of one of ordinary skill in the art, who would have a reasonable expectation that the food without the carotenoids would continue to serve as an acceptable diet for all of cod, halibut and fry. Office Action, page 4. While Applicants respectfully disagree with this statement, even if it were taken as accurate, the combination of Breivik and Food Day does not render the present invention obvious.

Applicants submit that the combination of Breivik and Food Day, whether considered separately or in any combination, fail to teach or suggest the claimed invention. Accordingly, Applicants submit that the claims are patentable over the cited art, and respectfully request withdrawal of the rejections under 35 U.S.C. § 103(a).

It is respectfully requested that the claims be allowed and the case passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

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